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MARCH 5, 1980

1561972 COMPLETE SPECIFICATION  
2 SHEETS This drawing is a reproduction of  
the Original on a reduced scale  
Sheet 1

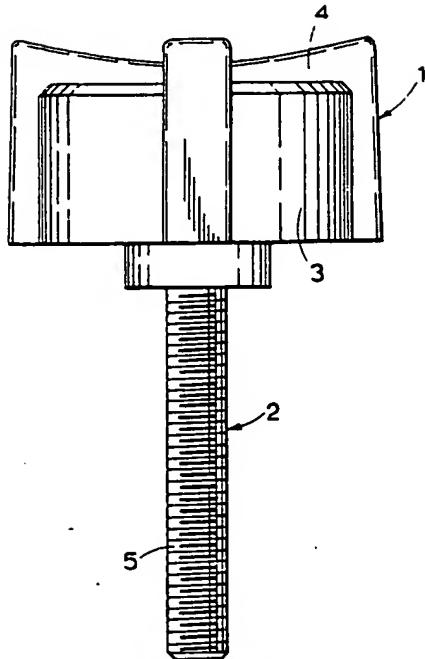


FIG.1.

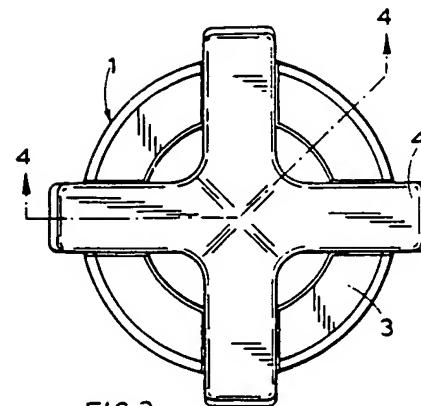


FIG.2.

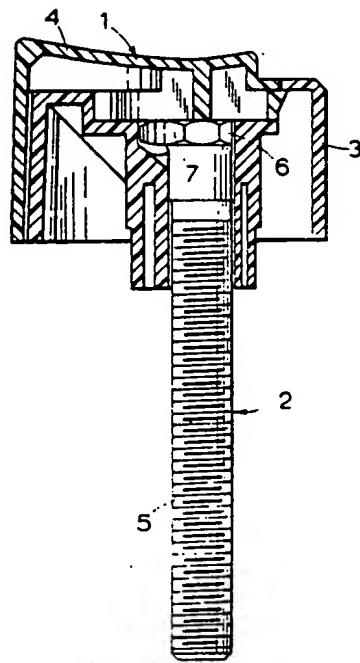


FIG.4.

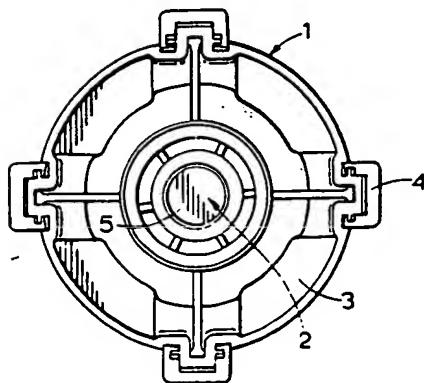


FIG.3.

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## (54) KNOBS

(71) We, GEORGE TURNOCK LIMITED, a British Company of Tunision Works, Navigation Street, Walsall, Staffordshire, WS2 9LU, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to knobs.  
 10 A known kind of knob which is much used in adjustable furniture such as hospital beds and office chairs comprises a screw-threaded metal shank projecting from a handle which is made as a unitary moulding from a plastics material and is usually of generally circular shape but provided at its periphery with serrations or recesses to enable the user to grip the knob and turn it readily without his hand slipping.  
 15 One of the difficulties in manufacturing such knobs arises from the fact that the handle has to be moulded around a non-circular head at one end of the shank, and that the head has therefore to be mounted in the mould when the handle is moulded, an operation which involves some skill and is relatively slow. An object of the invention is to enable a knob of comparable form to be made and which does not involve that relatively skilled and time-consuming process.

From one aspect the present invention consists in a knob comprising a handle and an operative member, the handle being assembled from two preformed portions having interengaging formations enabling them to be assembled together by snap engagement and having ribs or like projecting formations spaced around it to provide a grip for a user applying torque to the handle, the operative member having an engagement portion for engagement with some other article and having a non-circular portion which locates in a non-circular recess in at least one of the portions of the handle whereby torque can be transmitted from the handle to the operative member, and part of the operative member being

trapped in place by said portions when the handle is assembled.

The snap engagement may be such that the portions are subsequently separable; in a preferred arrangement, however, the engagement is such that the portions cannot be disassembled without damaging or fracturing at least one of the portions.

The complete knob may be manufactured and supplied by a manufacturer, but it is possible that the handle portions may be supplied in an un-assembled form for assembly around an operative member which already forms part of some other piece of apparatus, for example a valve spindle. From another aspect, therefore, the present invention consists in the preformed portions of a handle which can be assembled with a suitable operative member to form a knob of the kind outlined above in the last preceding paragraph but one.

One embodiment of the knob embodying the invention will now be described with reference to the accompanying drawings in which:—

Figure 1 is a side view of the knob, 75  
 Figure 2 is a plan view of the knob, 75  
 Figure 3 is an inverted plan view of the knob, 75  
 Figure 4 is a section on the line 4—4 of Figure 2, 75  
 Figure 5 is a plan view of the body portion of the knob, 80  
 Figure 6 is an inverted plan view of the body portion, 80  
 Figure 7 is a side view of the body portion, 85  
 Figure 8 is a section on the line 8—8 of Figure 5, 85  
 Figure 9 is a plan view of the rib portion of the knob, 85  
 Figure 10 is an inverted plan view of the rib portion, 90  
 Figure 11 is a side view of the rib portion, and 90  
 Figure 12 is a section on the line 12—12 of Figure 10. 95  
 Referring first to Figures 1 to 4 of the

the lugs 33 lie in a common plane normal to the axis of the rib portion.

The knob is assembled in the following manner. The shank 5 of the screw 2 is dropped into the bore of the support 12, and if necessary the screw is rotated slightly to allow the head 6 to locate in the recess 13. The free ends of the ribs 27 are then engaged around the upper ends of the buttresses 20 and the rib portion is pushed downwards relative to the body portion. The side walls of each rib enter the grooves 21 alongside the buttresses 20. On continued movement the boss on the rib portion 4 enters the open top of the body portion 3 and finally the lugs 33 snap into the ports 25 to retain the two portions in engagement. At the same time the grooves 29 in the lower ends of the ribs 27 receive the tongues 22 on the body portion, and the lower parts of the arms 26 enter the channels 23 in the top of the body portion.

In the assembled knob the fins 32 abut the head 6 of the screw 2 and prevent axial movement of the screw. The engagement between the tongues 22 and grooves 29 prevent the lower ends of the ribs being prized outwards from the body portion; and the engagement between the lugs 33 and the body portion is such that subsequent separation of the portions is virtually impossible, or can be effected only with damage to or fracture of the portions.

In use, when torque is applied to the handle the user's hand tends to engage the sides of the ribs 27 and to some extent the sides of the arms 26. Torque is transmitted from them directly to the body portion through the buttresses 20 and the sides of the channels 23 respectively. The body in turn transmits the torque to the head 6 of the screw 2.

As will be apparent from the foregoing description the dimensions of the two portions should match one another so that the portions can be readily assembled together to provide a handle of which the component portions are tightly engaged with each other. To this end the two portions are preferably made in appropriate mould-recesses in the same moulding tool. Then, any gradual changes in temperature of the tool, or variations in the timing of the moulding cycle, such as might give rise to slight variations in the dimensions of the two portions, will affect both portions alike so that the portions will still match each other. As mentioned above, the two portions are so shaped that each of them can be made in a simple two-part mould, without undercuts, this simplifies manufacture and leads to a rapid moulding rate.

Numerous modifications may of course be made without departing from the scope of the invention. For example the recess 13

may be shaped to accommodate a screw head of some other shape thought it is essential that the head, or some part attached to or connected with the head should be of asymmetrical shape so that it can interengage the recess 13 in such a manner as to enable torque to be transmitted from the handle to the screw. In another modification the head engages a recess in the rib portion so that torque is at least partially transmitted from the rib portion direct to the screw. In another modification the shank of the screw projects through the centre of the rib portion instead of projecting through the body portion, and the lower part of the support 12 is omitted, the support being closed to prevent the escape of the screw.

In another modification the flange 11 is formed with four inclined portions which extend upwards and outwards from the mouth of the recess. As viewed from the axis of the body portion each such inclined portion lies between a pair of adjacent buttresses. If during assembly of the knob the angular position of the screw is initially incorrect, the radially projecting parts of the head tend to engage the sides of the inclined portions and cause the screw to rotate to its correct angular position as it drops.

In another modification the lugs 33 are of semi-circular or other rounded cross-section, and the tops of the openings are of complementary shape. With this arrangement it may be possible, with the application of considerable force, to separate the body and rib portions without damaging them.

If desired the handle may be used with a screw having a female thread. The thread is formed inside a tubular metal spigot provided with a head similar to that provided on the male-threaded screw described above. In another application the handle is permanently secured to a spindle such as the spindle of a valve, for example a radiator valve. The body portion is placed over the spindle so that the end of the spindle projects into the space surrounded by the inner wall 10. A head is then secured to the spindle, and the rib portion is snapped into position. The head may, for example, comprise a nut of the kind made from a rectangular piece of sheet metal and having a central hole bordered by the free ends of a pair of opposed tongues.

It is sometimes desirable to mark knobs with arrows, pointers or other markings, so that, for example, a knob can be rotated to a particular angular position or an indication can be given to the user of the direction in which a knob must be rotated to have a certain effect. A knob of the kind illustrated in the accompanying drawings can readily be provided with such a marking in the following manner. A through hole having the

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described with reference to and as shown in the accompanying drawings.

18. The preformed portions of a handle which can be assembled with a suitable operative member to form a knob in accordance with any of the preceding claims.

19. The preformed portions of a handle according to Claim 18 and substantially as hereinbefore described with reference to and

as shown in Figures 5 to 12 of the accompanying drawings. 10

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